

THAT WHICH IS CLAIMED:

1. A method for conferring resistance to an herbicide in a cell, comprising
5 transforming said cell with a DNA construct, said construct comprising a promoter that drives expression in said cell, operably linked to a nucleotide sequence encoding a decarboxylase, wherein expression of said decarboxylase in said cell confers resistance to at least one herbicide.
- 10 2. The method of claim 1, wherein said decarboxylase is selected from the group consisting of a pyruvate decarboxylase, a benzoylformate decarboxylase, an oxalyl-CoA decarboxylase, a 2-oxoglutarate decarboxylase, an indolepyruvate decarboxylase, a 5-guanidino-2-oxopentanoate decarboxylase, a phenylglyoxylate dehydrogenase (acylating), a pyruvate dehydrogenase (cytochrome), a pyruvate oxidase,
15 a pyruvate dehydrogenase (lipoamide), an oxoglutarate dehydrogenase (lipoamide), a transketolase, a formaldehyde transketolase, an acetoin-ribose-5-phosphate transaldolase, a tartronate-semialdehyde synthase, a phosphoketolase, a fructose-6-phosphate phosphoketolase, a benzoin aldolase, a 2-hydroxy-3-oxoadipate synthase, an acetolactate synthase, an 1-deoxy-C-xylulose 5-phosphate synthase, and a sulfoacetaldehyde lyase.
- 20 3. The method of claim 1, wherein said nucleotide sequence has at least 90% identity with the nucleotide sequence of SEQ ID NO:1, 2, 13, 14, 21, or 23.
4. The method of claim 1, wherein expression of the protein results in
25 increased tolerance of the cell to more than one herbicide.
5. The method of claim 1, wherein said herbicide is a glyphosate.
6. The method of claim 1, wherein said decarboxylase has a TPP-binding
30 domain.

7. The method of claim 1, wherein said cell is a plant cell.
8. The method of claim 1, wherein said cell is a bacterial cell.
- 5 9. A transformed plant cell, said cell comprising a DNA construct, said construct comprising a promoter that drives expression in a plant cell operably linked with a nucleotide sequence that encodes a decarboxylase, wherein expression of said decarboxylase in said cell confers resistance to at least one herbicide.
- 10 10. The plant cell of claim 9, wherein said nucleotide sequence has at least 90% identity with the nucleotide sequence of SEQ ID NO:1, 2, 13, 14, 21, or 23.
11. A plant regenerated from the plant cell of claim 9, wherein said plant is resistant to at least one herbicide.
- 15 12. Transformed seed of a plant of claim 11.
13. A plant having stably incorporated into its genome a DNA construct comprising a promoter that drives expression in a plant cell operably linked with a nucleotide sequence that encodes a decarboxylase, wherein expression of said decarboxylase in said cell confers resistance to at least one herbicide.
- 20 14. The plant of claim 13, wherein said nucleotide sequence has at least 90% identity with the nucleotide sequence of SEQ ID NO:1, 2, 13, 14, 21, or 23.
- 25 15. The plant of claim 13, wherein said plant is selected from the group consisting of maize, sorghum, wheat, sunflower, tomato, crucifers, peppers, potato, cotton, rice, soybean, sugarbeet, sugarcane, tobacco, barley, and oilseed rape.
- 30 16. A transformed bacterial cell, said cell comprising a DNA construct, said construct comprising a promoter that drives expression in a bacterial cell operably linked

with a nucleotide sequence that encodes a decarboxylase, wherein expression of said decarboxylase in said cell confers resistance to at least one herbicide.

17. The bacterial cell of claim 16, wherein said nucleotide sequence has at
5 least 90% identity with the nucleotide sequence of SEQ ID NO:1, 2, 13, 14, 21, or 23.